

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): A transparent substrate, ~~especially made of~~
comprising glass, and provided with a thin-film stack ~~comprising~~ including a plurality of
functional layers, ~~characterized in that said thin-film stack comprises~~ the thin-film stack
comprising:

at least three silver-based functional layers, ~~in that said~~
wherein the thin-film stack has a resistance $R < 1.5 \Omega$ per square and ~~in that said the~~
transparent substrate is transformable via ~~may undergo at least one transformation operation~~
~~involving~~ a heat treatment at a temperature of at least 500°C.

Claim 2 (Currently Amended): The transparent substrate as claimed in claim 1,
~~characterized in that it~~ wherein the transparent substrate has a light transmission $T_L \geq 70\%$.

Claim 3 (Currently Amended): The transparent substrate as claimed in claim 1,
~~characterized in that it~~ wherein the transparent substrate has a light transmission $T_L \geq 40\%$
~~and in that when it is associated with at least one other substrate to form a glazing assembly,~~
~~this glazing assembly has a selectivity ≥ 2 .~~

Claim 4 (Currently Amended): The transparent substrate as claimed in claim 1,
~~characterized in that it~~ wherein the transparent substrate has a light transmission $T_L \geq 40\%$
and a resistance $R \leq 1.1 \Omega$ per square.

Claim 5 (Currently Amended): The transparent substrate as claimed in ~~any one of the preceding claims~~ claim 1, ~~characterized in that it comprises~~ wherein the thin-film stack includes at least four silver-based functional layers.

Claim 6 (Currently Amended): The transparent substrate as claimed in ~~any one of the preceding claims~~ claim 1, ~~characterized in that~~ wherein the total thickness of the silver-based functional layers is greater than or equal to 25 nm ~~and is preferably between 35 and 50 nm when the stack comprises three functional layers and between 28 and 64 nm when the stack comprises at least four functional layers.~~

Claim 7 (Currently Amended): The transparent substrate as claimed in ~~any one of the preceding claims~~ claim 1, ~~characterized in that it comprises~~ further comprising an at least three identical features functional feature for each of the silver-based ~~of~~ functional layers, wherein each functional feature associates a corresponding silver-based functional layer ~~being associated in each functional feature~~ with at least one subjacent ~~and/or~~ or superjacent layer.

Claim 8 (Currently Amended): The transparent substrate as claimed in ~~any one of the preceding claims~~ claim 1, ~~characterized in that~~ wherein at least one of the plurality of functional layer, ~~and preferably each functional layer,~~ layers is located between at least one lower dielectric layer and at least one upper dielectric layer, ~~said dielectric layers preferably being based on ZnO, optionally doped with aluminum.~~

Claim 9 (Currently Amended): The transparent substrate as claimed in ~~any one of the preceding claims~~ claim 1, ~~characterized in that~~ wherein at least one functional layer, ~~and~~

~~preferably each functional layer,~~ comprises an upper layer based on Si_3N_4 , AlN_x or ~~based on a~~ mixture of ~~the two~~ Si_3N_4 and AlN .

Claim 10 (Currently Amended): The transparent substrate as claimed in ~~any one of~~ ~~the preceding claims~~ claim 1, ~~characterized in that it~~ wherein the transparent substrate is directly coated with a layer based on Si_3N_4 , AlN_x or ~~based on a mixture of the two~~ Si_3N_4 and AlN .

Claim 11 (Currently Amended): The transparent substrate as claimed in ~~any one of~~ ~~the preceding claims~~ claim 1, ~~characterized in that~~ wherein, in at least one functional feature, ~~and preferably in each functional feature,~~ an upper absorbent metal layer, ~~preferably based on~~ Ti , is located between one of the silver-based functional ~~layer~~ layers and at least one upper dielectric layer.

Claim 12 (Currently Amended): The transparent substrate as claimed in ~~any one of~~ ~~claims 1 to 10~~ claim 1, ~~characterized in that~~ wherein, in at least one functional feature, ~~and~~ ~~preferably in each functional feature,~~ a lower absorbent metal layer, ~~preferably based on~~ Ti , is located between at least one lower dielectric layer and one of the silver-based functional ~~layer~~ layers.

Claim 13 (Currently Amended): The transparent substrate as claimed in ~~any one of~~ ~~the preceding claims~~ claim 1, ~~characterized in that~~ wherein at least one functional feature, ~~and~~ ~~preferably each functional feature,~~ has the following structure: $\text{ZnO}/\text{Ag}/\dots\text{ZnO}/\text{Si}_3\text{N}_4$ and ~~preferably the following structure:~~ $\text{ZnO}/\text{Ag}/\text{Ti}/\text{ZnO}/\text{Si}_3\text{N}_4$.

Claim 14 (Currently Amended): The transparent substrate as claimed in ~~the preceding~~
~~claim claim 13, characterized in that wherein~~

the thin-film stack includes three silver-based functional layers, and

the thicknesses of the constituent layers of said the at least one functional feature in
~~the case of the three-layer stack are: of structure: ZnO/Ag/ . . . ZnO/Si₃N₄ and preferably~~
~~ZnO/Ag/Ti/ZnO/Si₃N₄ are: 5 to 15/10 to 17/ . . . 5 to 15/25 to 65 nm and preferably 5 to~~
~~15/10 to 17/0.2 to 3/5 to 15/25 to 65 nm.~~

Claim 15 (Currently Amended): The transparent substrate as claimed in claim 13,
~~characterized in that wherein~~

the thin-film stack includes four silver-based functional layers, and

the thicknesses of the constituent layers of said the at least one functional feature in
~~the case of the four-layer stack are: of structure: ZnO/Ag/ . . . ZnO/Si₃N₄ and preferably~~
~~ZnO/Ag/Ti/ZnO/Si₃N₄ are: 5 to 15/7 to 15/ . . . 5 to 15/23 to 65 nm and preferably 5 to 15/7~~
~~to 15/0.2 to 3/5 to 15/23 to 65 nm.~~

Claim 16 (Currently Amended-Withdrawn): A process for manufacturing a
transparent substrate, ~~especially made comprising~~ of glass, and provided with a thin-film
stack, the process comprising:

depositing on the transparent substrate a thin-film stack including a plurality of
functional layers, ~~characterized in that~~

wherein the plurality of functional layers include at least three silver-based functional
layers, ~~are deposited on said substrate, in that said the thin-film~~ stack has a resistance $R < 1.5$
 Ω per square, ~~and in that said the transparent~~ substrate is transformable via ~~may undergo at~~

~~least one transformation operation involving~~ a heat treatment at a temperature of at least 500°C.

Claim 17 (Currently Amended-Withdrawn): The process as claimed in claim 16, ~~characterized in that~~ wherein at least four silver-based functional layers are deposited on ~~said~~ the substrate.

Claim 18 (Currently Amended-Withdrawn): The process as claimed in claim 16, ~~or claim 17, characterized in that~~ wherein the total thickness of the silver-based functional layers deposited is greater than or equal to 25 nm ~~and is preferably between 35 and 50 nm when the stack comprises three functional layers and between 28 and 64 nm when the stack comprises at least four functional layers.~~

Claim 19 (Currently Amended-Withdrawn): The process as claimed in ~~one of claims claim 16~~ claim 16 ~~[[to 18]]~~, ~~characterized in that~~ wherein at least three identical functional features of the plurality of functional layers are deposited on ~~said~~ the transparent substrate, each of the functional features associates a functional layer of the plurality of functional layers being associated in each functional feature with at least one subjacent ~~and/or or~~ superjacent layer.

Claim 20 (Currently Amended-Withdrawn): The process as claimed in ~~any one of claims claim 16~~ claim 16 ~~[[to 19]]~~, ~~characterized in that,~~ wherein, for at least one of the plurality of functional ~~layer~~ layers, ~~and preferably for each functional layer,~~ at least one lower dielectric layer is deposited beneath ~~said~~ the one of the plurality of functional ~~layer~~ layers and an upper dielectric layer is deposited on ~~said~~ the one of the plurality of functional ~~layer~~ layers, ~~said~~

~~dielectric layers being preferably based on ZnO, optionally doped and dopable with aluminum.~~

Claim 21 (Currently Amended-Withdrawn): The process as claimed in ~~any one of~~ ~~claims claim~~ 16 [[to 20]], ~~characterized in that~~ wherein an upper layer based on Si_3N_4 , AlN , or based on a mixture of the two Si_3N_4 and AlN is deposited on top of at least one of the plurality of functional layer layers, ~~and preferably on top of each functional layer.~~

Claim 22 (Currently Amended-Withdrawn): The process as claimed in ~~any one of~~ ~~claims claim~~ 16 [[to 21]], ~~characterized in that said~~ wherein the transparent substrate is directly coated with a layer based on Si_3N_4 AlN , or ~~based on~~ a mixture of the two Si_3N_4 and AlN .

Claim 23 (Currently Amended-Withdrawn): The process as claimed in ~~any one of~~ ~~claims claim~~ 16, to 22, ~~characterized in that~~ wherein, in at least one functional feature, ~~and preferably in each functional feature~~, an upper absorbent metal layer, ~~preferably based on Ti~~, is deposited on top of one of the silver-based functional ~~layer~~ layers and beneath at least one upper dielectric layer.

Claim 24 (Currently Amended-Withdrawn): The process as claimed in ~~any one of~~ ~~claims claim~~ 16, to 22, ~~characterized in that~~ wherein, in at least one functional feature, ~~and preferably in each functional feature~~, a lower absorbent metal layer, ~~preferably based on Ti~~, is deposited on top of at least one lower dielectric layer and beneath one of the silver-based functional ~~layer~~ layers.

Claim 25 (Currently Amended-Withdrawn): The process as claimed in ~~any one of~~ claims claim 16, to 24, ~~characterized in that wherein,~~ at least one functional feature deposited, ~~and preferably each functional feature deposited,~~ has the following structure: ZnO/Ag/ . . . ZnO/Si₃N₄ ~~and preferably the following structure: ZnO/Ag/Ti/ZnO/Si₃N₄.~~

Claim 26 (Currently Amended-Withdrawn): The process as claimed in ~~the preceding~~ claim claim 25, ~~characterized in that wherein,~~
the thin-film stack includes three silver-based functional layers, and
the corresponding thicknesses of the constituent layers of ~~said feature in the case of~~ the three-layer stack- the at least one functional feature of structure: are: ZnO/Ag/ . . . ZnO/Si₃N₄ ~~and preferably ZnO/Ag/Ti/ZnO/Si₃N₄ are:~~ 5 to 15/10 to 17/ . . . 5 to 15/25 to 65 nm ~~and preferably 5 to 15/10 to 17/0.2 to 3/5 to 15/25 to 65 nm.~~

Claim 27 (Currently Amended-Withdrawn): The process as claimed in claim 25,
~~characterized in that wherein,~~
the thin-film stack includes four silver-based functional layers, and
the thicknesses of the constituent layers of ~~said feature in the case of the four-layer~~ stack the at least one functional feature of structure: are: ZnO/Ag/ . . . ZnO/Si₃N₄ ~~and~~ preferably ZnO/Ag/Ti/ZnO/Si₃N₄ are: 5 to 15/7 to 15/ . . . 5 to 15/23 to 65 nm ~~and preferably 5 to 15/7 to 15/0.2 to 3/5 to 15/23 to 65 nm.~~

Claim 28 (Currently Amended-Withdrawn): The process as claimed in ~~any one of~~ claims claim 16, to 27 ~~characterized in that wherein~~ the functional features are deposited by passing ~~said~~ the substrate several times through a single manufacturing device.

Claim 29 (Currently Amended-Withdrawn): The process as claimed in ~~the preceding~~
~~claim claim 28, characterized in that wherein when said the thin-film~~ stack comprises four
silver-based functional layers ~~and[[,]] the functional features are deposited in pairs[[,]] by~~
passing ~~said the~~ substrate twice through ~~[[a]] the~~ single manufacturing device.

Claim 30 (Currently Amended-Withdrawn): The process as claimed in ~~the preceding~~
~~claim claim 29, characterized in that wherein the thicknesses of layers of the deposited~~
~~functional features layers~~ are substantially identical during each of the two passes.

Claim 31 (Currently Amended-Withdrawn): The process as claimed in ~~any one of~~
~~claims claim 16 [[to 30]], characterized in that wherein when said the transparent~~ substrate
~~undergoes a transformation operation involving is transformable via~~ a heat treatment at a
temperature of at least 500°C, ~~its such that the~~ resistance R ~~of the transparent substrate~~ is
reduced by at least 10%, ~~or even at least 15%.~~

Claim 32 (Currently Amended): A glazing assembly for one or more of thermal
control, ~~and/or~~ electromagnetic shielding, ~~or and/or~~ heating, the glazing assembly
comprising: which incorporates at least one substrate as claimed in any one of claims 1 to 15
a transparent glass substrate including a thin-film stack of at least three silver-based
functional layers,
wherein the thin-film stack has a resistance $R < 1.5 \Omega$ per square and the transparent
substrate is transformable via a heat treatment at a temperature of at least 500°C.

Claim 33 (Currently Amended-Withdrawn): The transparent ~~The use of the~~ substrate
as claimed in ~~any one of claims claim 1 to 15,~~ wherein the transparent substrate ~~for producing~~

produces, alternatively or cumulatively, thermal control, ~~and/or~~ electromagnetic shielding, ~~and/or~~ or heating.

Claim 34 (New): The glazing assembly claimed in Claim 32, further comprising at least one other substrate,
wherein the glazing assembly has a selectivity ≥ 2 .

Claim 35 (New): The transparent substrate as claimed in claim 1, wherein the total thickness of the silver-based functional layers is between 35 and 50 nm in the thin-film stack comprising three silver-based functional layers and between 28 and 64 nm in a thin-film stack comprising at least four silver-based functional layers.

Claim 36 (New): The transparent substrate as claimed in claim 1, wherein each of the plurality of functional layers is located between at least one lower dielectric layer and at least one upper dielectric layer, and the dielectric layers are based on ZnO and dopeable with aluminum.

Claim 37 (New): The transparent substrate as claimed in claim 1, wherein each of the plurality of functional layers comprises an upper layer based on Si_3N_4 , AlN, or a mixture of Si_3N_4 and AlN.

Claim 38 (New): The transparent substrate as claimed in claim 1, wherein, in each functional feature, an upper absorbent metal layer based on Ti is located between one of the silver-based functional layers and at least one upper dielectric layer.

Claim 39 (New): The transparent substrate as claimed in claim 1, wherein, in each functional feature, a lower absorbent metal layer based on Ti is located between at least one lower dielectric layer and one of the silver-based functional layer layers.

Claim 40 (New): The transparent substrate as claimed in claim 1, wherein each functional feature has the following structure: $\text{ZnO}/\text{Ag}/\text{Ti}/\text{ZnO}/\text{Si}_3\text{N}_4$.

Claim 41 (New): The transparent substrate as claimed in claim 40, wherein, the thin-film stack includes three silver-based functional layers and the thicknesses of the constituent layers of each functional feature of structure: $\text{ZnO}/\text{Ag}/\text{Ti}/\text{ZnO}/\text{Si}_3\text{N}_4$ are: 5 to 15/10 to 17/0.2 to 3/5 to 15/25 to 65 nm.

Claim 42 (New): The transparent substrate as claimed in claim 40, wherein, the thin-film stack includes four silver-based functional layers and the thicknesses of the constituent layers of each functional feature of structure: $\text{ZnO}/\text{Ag}/\text{Ti}/\text{ZnO}/\text{Si}_3\text{N}_4$ are: 5 to 15/7 to 15/0.2 to 3/5 to 15/23 to 65 nm.

Claim 43 (New-Withdrawn): The process as claimed in claim 16, wherein the total thickness of the silver-based functional layers deposited is between 35 and 50 nm in the thin-film stack comprising three silver-based functional layers and between 28 and 64 nm in a thin-film stack comprising at least four silver-based functional layers.

Claim 44 (New-Withdrawn): The process as claimed in claim 16, wherein, for each of the plurality of functional layers, a lower dielectric layer is deposited beneath each of the

plurality of functional layers and an upper dielectric layer is deposited on each of the plurality of functional layers,

wherein the at least one lower dielectric layer and the upper dielectric later are based on ZnO and dopable with aluminum.

Claim 45 (New-Withdrawn): The process as claimed in claim 16, wherein an upper layer based on Si_3N_4 , AlN, or a mixture of Si_3N_4 and AlN is deposited on top of each functional layer.

Claim 46 (New-Withdrawn): The process as claimed in claim 16, wherein, in each functional feature, an upper absorbent metal layer based on Ti is deposited on top of a corresponding silver-based functional layer and beneath an upper dielectric layer.

Claim 47 (New-Withdrawn): The process as claimed in claim 16, wherein, in each functional feature, a lower absorbent metal layer based on Ti is deposited on top of a lower dielectric layer and beneath a corresponding silver-based functional layer.

Claim 48 (New-Withdrawn): The process as claimed in claim 16, wherein, each functional feature deposited has the following structure: $\text{ZnO}/\text{Ag}/\text{Ti}/\text{ZnO}/\text{Si}_3\text{N}_4$.

Claim 49 (New-Withdrawn): The process as claimed claim 48, wherein, the thin-film stack includes three silver-based functional layers and the corresponding thicknesses of the constituent layers of each functional feature of structure: $\text{ZnO}/\text{Ag}/\text{Ti}/\text{ZnO}/\text{Si}_3\text{N}_4$ are: 5 to 15/10 to 17/0.2 to 3/5 to 15/25 to 65 nm.

Claim 50 (New-Withdrawn): The process as claimed in claim 48, wherein the thin-film stack includes four silver-based functional layers and the thicknesses of the constituent layers of each functional feature of structure: ZnO/Ag/Ti/ZnO/Si₃N₄ are: 5 to 15/7 to 15/0.2 to 3/5 to 15/23 to 65 nm.

Claim 51 (New-Withdrawn): The process as claimed in claim 31, wherein the resistance R of the transparent substrate is reduced by at least 15%.